

What is claimed is:

1. An orthodontic component, comprising a rigid backbone polymer including at least one of a compatibilizing side group or a solubilizing side group.
2. The orthodontic component of claim 1, wherein the polymer is used in a neat form.
3. The orthodontic component of claim 1, further comprising reinforcing fibers.
4. The orthodontic component of claim 1, further comprising filler.
5. The orthodontic component of claim 1, further comprising a non-rigid backbone polymer.
6. The orthodontic component of claim 1, comprising a wire having a shape providing a good fit in an orthodontic bracket.
7. The orthodontic component of claim 1, wherein the side group reacts with the non-rigid backbone polymer and thereby reduces phase separation.
8. An orthodontic component, comprising a thermoplastic polymer, wherein the thermoplastic polymer in the neat resin form has an unreinforced tensile strength of at least about 150 MPa and an unreinforced tensile modulus of at least about 4 GPa.
9. The orthodontic component of claim 8, wherein the polymer in the neat resin form has an unreinforced elastic deformation of at least about 30.
10. The orthodontic component of claim 8, wherein the polymer in the neat resin form has an unreinforced tensile strength of at least about 200 MPa and an unreinforced tensile modulus of at least about 8 GPa.

11. The orthodontic component of claim 8, having a refractive index of about 1.66 to about 1.70.
12. The orthodontic component of claim 8, further comprising a reinforcing agent.
13. The orthodontic component of claim 8, consisting essentially of the thermoplastic polymer and no more than 5 percent by component weight of a reinforcing agent.
14. The orthodontic component of claim 8, selected from a force delivery component, a wire, an attachment and an auxiliary.
15. The orthodontic component of claim 8, comprising a wire wherein the wire has a cross section that is not circular and not quadrilateral.
16. The orthodontic component of claim 8, comprising a wire wherein the wire has a cross sectional shape selected from a circle, a portion of a circle delineated by two radii of the circle, a polygon, an "I" shape, a "C" shape, an "L" shape, a "T" shape or a combination thereof.
17. The orthodontic component of claim 8, comprising a bracket having a slot, wherein the slot is configured to interengage with wires of different cross-sectional shapes to provide a good fit.
18. The orthodontic component of claim 8, comprising a wire, wherein the wire has a different cross section at different points along its length.
19. The orthodontic component of claim 8, having a Rockwell B hardness of at least about 75.
20. The orthodontic component of claim 8, having a pencil hardness of at least about 7H.

21. The orthodontic component of claim 8, comprising at least a second polymer material.
22. The orthodontic component of claim 8, consisting essentially of the thermoplastic polymer.
23. The orthodontic component of claim 8, wherein the thermoplastic material comprises a coating over at least part of a core.
24. A method of forming an orthodontic component or an orthodontic component precursor, comprising:
 - providing a thermoplastic material wherein the thermoplastic material in the neat resin form has an unreinforced tensile strength of at least about 150 MPa and an unreinforced tensile modulus of at least about 4 GPa;
 - heating the thermoplastic material; and
 - processing the heated thermoplastic material to form the orthodontic component or the orthodontic component precursor.
25. The method of claim 24, wherein the thermoplastic material comprises a rigid backbone polymer.
26. The method of claim 24, wherein the flexural strength and modulus properties of the orthodontic component are isotropic.
27. The method of claim 24, wherein the orthodontic component comprises an orthodontic force delivery component.
28. The method of claim 24, wherein the orthodontic component comprises an orthodontic force delivery component and the processing step comprises thermal processing the heated material to form the force delivery component having a different cross section at different points along its length.

29. The method of claim 24, wherein the orthodontic component comprises an orthodontic force delivery component and the processing step comprises thermal processing the heated material to form the force delivery component having a non-circular cross section.
30. The method of claim 24, wherein the thermoplastic material comprises at least one thermoplastic rigid backbone polymer and a reinforcing agent.
31. The method of claim 24, wherein the material consists essentially of a mixture of thermoplastic rigid backbone polymers.
32. The method of claim 24, further comprising the steps of heating and processing the orthodontic component precursor a second time to form the orthodontic component.
33. The method of claim 24, further comprising the steps of heating and processing the orthodontic component a second time to modify the orthodontic component shape.
34. A method of providing an orthodontic force system, comprising:
providing a bracket having a slot with a slot shape;
mounting the bracket to a tooth in need of orthodontic movement;
providing a first force delivery component comprising a first cross sectional shape having a good fit with the bracket slot;
interengaging the first force delivery component in the bracket slot to provide a first orthodontic force system;
removing the first force delivery component ;
providing a second force delivery component comprising a second cross sectional shape different than the first cross sectional shape and having a good fit with the bracket slot; and
interengaging the second force delivery component in the bracket slot to provide a second orthodontic force system.

35. The method of claim 34 wherein the force delivery components are rigid backbone polymer wires.